APPENDIX H

Mobile Data Terminal Replacement
Scope of Work
(for information only)

GENERAL

The purpose of this project is to design and prototype the necessary hardware and software to demonstrate control of the Automatic Vehicle Location (AVL)/Radio system from third party equipment, via the LonWorks port of the Mobile Data Unit (MDU).

The work is described in three phases. Phase I pertains to work required to prove that King County's existing on-board AVL/Radio equipment can be controlled, via its LonWorks data port, by equipment other than the current proprietary MDT.

Phase II extends the work to include the use of a third party, off-the-shelf variety of MDT, referred to as a Driver Display Unit (DDU). A portable computer shall be used to interface the DDU to the AVL/Radio system in this phase.

In Phase III, a dedicated mobile computer, referred to as a Vehicle Logic Unit (VLU), will be provided to perform the interface function managed by the laptop computer in Phase II.

Phase I - MDT Elimination

This section details the work required to facilitate replacement of the MDT. In the design of the equipment hardware and software described below, the technical staff shall provide the functionality required to relocate all non-terminal functions now provided by the MDT. The minimum required functionality includes:

- Public Address (PA) amplifier and all PA functions
- System defaults, radio squelch and audio amplitude control
- Amplifiers for handset microphone and earpiece
- Audio switches
- Emergency Alarm (EA) functions
- Cable connections for EA, handset and PA, including boom microphone and both internal and external speakers
- Handset cradle hook-switch monitor
- Receiver mute and control
- Radio channel select

ARI Software

Modify the MDU's software, known as the ARI software, to include the LonWorks variablesnecessary for all MDT operator functions to be accomplished via the LonWorks port.

Radio Controller

Design and build one each Radio Controller Unit (RCU). The RCU shall provide the radio interface capability now present in the MDT.

Audio Interface Box

Design, build and deliver one each Audio Interface Box (AIB). The AIB shall provide for the audio interface, audio amplification and Emergency Action (EA) switch interface capability now present in the MDT. This unit will serve as a prototype for testing and development purposes,

provided that, such prototype shall be delivered to the County as a production quality unit at the close of this contract.

MDU/Controller Cable
Design, build and deliver one each MDU/Controller Cable. This cable shall interface the RCU to the existing MDU.

Laptop Computer Configuration and Software
Configure a laptop computer with the necessary hardware and software to interface with the AVL/Radio systems LonWorks network.

Phase II - Operator Terminal

Demonstrate the use of an off-the-shelf DDU as a replacement for the existing MDT. The demonstration shall incorporate the laptop computer as a means to interface the DDU to the LonWorks network.

Laptop Computer Configuration and Software
Configure a laptop computer with the necessary hardware and software to provide and interface between the J1708 network compatible DDU and the LonWorks compatible AVL/Radio system.

Driver Display Unit (DDU)
Program and demonstrate the use of a QSI Qterm Model K60 terminal (or approved equal) as a viable replacement for the existing MDT.

Phase III - Vehicle Logic Unit

Provide, program and demonstrate a off-the-shelf type of third party VLU, to be approved, in use as a permanent interface between the J1708 compatible DDU and the LonWorks compatible AVL/Radio system.

DOCUMENTATION

Documentation shall include the following:

- Complete and documented source code for all developed software necessary for operation and maintenance of the TIU
- Operation and Maintenance Manual, to include circuit description, theory of operation, operation procedure, and relevant preventive maintenance and troubleshooting procedures.
- Drawing package, to include software and circuit block diagrams, electrical schematic detailing all circuits to the component level, electrical schematic of system interconnect, pictorial drawings of printed circuit board, and mechanical drawing of unit packaging.